

REMARKS/ARGUMENTS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 2, 4, 5, 7, 8 and 10-12 are pending in the application. Claims 2, 5 and 8 are amended; Claims 1, 3, 6 and 9 are canceled; and Claims 11 and 12 are newly added by the present amendment. Support for the new and amended claims can be found in the original specification, claims and drawings.¹ No new matter is presented.

In the outstanding Official Action, Claims 1-10 were rejected under 35 U.S.C. § 102(e) as anticipated by Sarkkinen et al. (U.S. Pub. No. 2001/0046877, hereinafter Sarkkinen). In response to this rejection, Applicants respectfully submit that each of independent Claims 2, 4, 5, 7, 8, 10 and 11 recite novel features clearly not taught or rendered obvious by the applied reference.

Amended independent Claim 2 relates to a radio communication system in which the same information is transmitted from a radio station to a plurality of mobile stations (e.g. multicast) with a predetermined downlink transmission power. The radio station includes a transmission power controller configured to control the predetermined downlink transmission power based on control information transmitted by the mobile stations. The mobile station comprises:

a decision unit configured to decide to transmit the control information to the radio station *at a predetermined frequency when a plurality of same information pieces are received by a transceiver*; and

a transmitter configured to transmit the control information to the radio station based on a result of the decision made by the decision unit, the control information being generated according to reception quality of the same information transmitted by the radio station.

¹ E.g., specification, p. 11 and p. 18, lines 19-20.

Independent Claims 5 and 8, while directed to alternative embodiments, are amended to recite substantially similar features as those emphasized above. Accordingly, the remarks and arguments presented below are applicable to each of amended independent Claims 2, 5 and 8.

As noted in the Background and Summary portions of the specification, the process of sending control information from the mobile station to the radio station only at a predetermined frequency reduces strain on system resources by not transmitting control information at every available opportunity. For example, as noted at p. 11 of the specification, the decision unit decides to transmit control information to the base station at a predetermined frequency (such once every two times or once every three times) when a plurality of the same information pieces is received by the transceiver of the mobile station.

Turning to the applied reference, Sarkkinen describes a method for adaptive power control in a multicast transmission system. In Sarkkinen, power level information is provided in a transmitted channel (e.g., the system broadcast information channel SIB) received by a user equipment which then measures the actual power level of a received signal and compares the measured power level to the power level indicated by the power level information provided in the transmitted channel.² This power level measurement information is included in a message sent by the user equipment based on the results obtained when the power level measured by the user equipment is compared to the power level indicated by the power level information provided in the SIB.³

Sarkkinen, however, fails to teach or suggest deciding to transmit the control information to the radio station “*at a predetermined frequency when a plurality of same information pieces are received by the transceiver*,” as recited in amended independent Claim 2.

² Sarkkinen, Abstract.

³ Id.

In addressing the claimed features directed to the “decision unit” the outstanding Official Action relies on Figs. 3-5 and paragraphs [0033]-[0035], [0037] of Sarkkinen. The cited portion of Sarkkinen describes that the user equipment (11, 12) receives system broadcast information (i.e., SIB signaling messages) indicating an intended transmission power level of the received multicast transmission. Then, user equipment measures an actual received power level value. Depending on the results obtained from a comparison of these values, the user equipment may or may not send an indication that the measured value differs from the values received in the SIB signaling messages.

Thus, the cited portion of Sarkkinen merely describes a process by which the user equipment receives an intended power level value in the SIB signaling messages, generates measurements of the actual received power value, compares the two, and then may or may not choose to send an indication that the measured power level differs from the power value indicated in the received SIB message.

At no point does Sarkkinen describe sending control messages at a predetermined frequency, but instead, describes that control messages are transmitted when there is a difference between the actual received power level of a signal and the power level indicated in the SIB signaling messages. Amended independent Claim 2, in contrast, recites that the mobile station decides to transmit the control information to the radio station “*at a predetermined frequency when a plurality of same information pieces are received by the transceiver.*” Sarkkinen clearly fails to teach or suggest transmitting control messages at a predetermined frequency, much less that the control signals are transmitted at a predetermined frequency based on the reception of a plurality of same information pieces by the transceiver.

Accordingly, for at least the reasons discussed above, Applicants respectfully request that the rejection of Claim 2 under 35 U.S.C. § 102 be withdrawn. For substantially similar

reasons, it is also submitted that amended independent Claims 5 and 8 patentably define over Sarkkinen.

Regarding independent Claim 4, this claim recites a radio communication system including a radio station comprising:

a mobile station selector configured to *select a mobile station to which a transmission request for control information is transmitted ...*

a transmission power controller configured to control the predetermined downlink transmission power based on the control information transmitted by the mobile station *that has been selected by the mobile station selector ...*

Independent Claims 7 and 10, while directed to alternative embodiments, are amended to recite the feature of “selecting a mobile station” as emphasized above with respect to independent Claim 4. Accordingly, the remarks and arguments presented below are applicable to each of independent Claims 4, 7 and 10.

As described in an exemplary embodiment at Figs. 8 and 9, and the corresponding description of the specification, a mobile station selector in the radio station selects a specific mobile station to which a transmission request for control information is sent. Then, the radio station controls the downlink transmission power of the multicast communication based on the control information received by the selected mobile station.

In addressing the “mobile station selector” feature recited in independent Claim 4, the outstanding Official Action relies on paragraph [0006] of Sarkkinen and simply states that the reference “teaches a multicast system which restricts transmissions to selected units.”⁴ As described in the cited portion of Sarkkinen, the multicast service uses common network resources to provide data communications only to a restricted group of people in one or more cells of the network. Thus, the assertion in the outstanding Official Action that Sarkkinen teaches a multicast system which restricts transmission to selected units may be accurate,

⁴ Official Action, p. 5.

however, the reference fails to teach or suggest that a base station in the system includes a selector configured to select “***a mobile station to which a transmission request for control information is transmitted***”, as recited in independent Claim 4.

Specifically, as described at paragraphs [0033]-[0035] simply because a specific user equipment in Sarkkinen is capable of receiving multicast communications, this user equipment does not always send control information. Further, none of the infrastructure devices of Sarkkinen selects a specific mobile station to send a transmission request for control information. Instead, as noted above, Sarkkinen describes that the user equipment eligible to participate in the multicast communications determines whether to send control information based on a comparison of a measured received power level and a power value indicated in a received sieve message. At no point does Sarkkinen teach or suggest that a base station of any other infrastructure device selects a specific mobile station to which to transmit a request for control information, much less that the infrastructure device controls the predetermined downlink transmission power based on the control information transmitted by a selected mobile station.

Therefore, Sarkkinen fails to teach or suggest a radio station including “a mobile station selector configured to ***select a mobile station to which a transmission request for control information is transmitted***” and “a transmission power controller configured to control the predetermined downlink transmission power based on the control information transmitted by the mobile station that has been selected by the mobile station selector” as recited in independent Claim 4.

Accordingly, Applicants respectfully request that the rejection of Claim 4 under 35 U.S.C. § 102 be withdrawn. For substantially similar reasons, it is also submitted that independent Claims 7 and 10 patentably define over Sarkkinen.

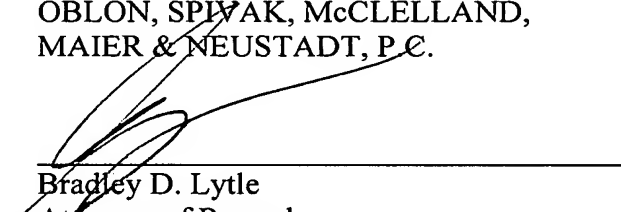
As noted above, Sarkkinen clearly describes that the determination of whether or not to send a control signal is based on a comparison between an actual measured received power level and a predetermined value received in a SIB signaling message. Therefore, this reference also fails to teach or suggest a mobile station including “a decision unit configured to decide to ***randomly transmit control information to a radio station***” as recited in new Claim 11. Accordingly, Applicants respectfully submit that new independent Claim 11 recites novel features not taught or rendered obvious by Sarkkinen.

Further, Sarkkinen also fails to teach or suggest a mobile station including “a mobile station selector configured to ***randomly select the mobile station to which the transmission request for the control information is transmitted***” as recited in new Claim 12. Accordingly, Applicants respectfully submit that new independent Claim 12 recites novel features not taught or rendered obvious by Sarkkinen.

Consequently, in view of the present amendment and in light of the foregoing comments, it is respectfully submitted that the invention defined by Claims 2, 4, 5, 7, 8 and 10-12 is patentably distinguishing over the applied references. The present application is therefore believed to be in condition for formal allowance and an early and favorable reconsideration of the application is therefore requested.

Respectfully submitted,

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